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Single Crystal Growth and de Haas-van Alphen effect of $\text{Ce}_3\text{Al}_{11}$

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We made high quality single crystals of $\text{Ce}_3\text{Al}_{11}$ with the orthorhombic structure. Temperature dependence of electrical resistivity shows two shoulders at 3.4 K and 6.0 K, corresponding to magnetic moment alignments. The residual resistivity and residual resistivity ratio are $0.5 \mu\Omega\text{cm}$ and 150, respectively. After a metamagnetic transition at 2 T, one de Haas-van Alphen signal was observed and the effective mass was determined for the branch.